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10/077,509	02/15/2002	Jung-Lin Pan	I-2-178.3US	5390

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UNITED PLAZA, SUITE 1600  
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PHILADELPHIA, PA 19103

EXAMINER

BLOUNT, STEVEN

ART UNIT	PAPER NUMBER
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2661

3

DATE MAILED: 12/03/2003

6-10

Please find below and/or attached an Office communication concerning this application or proceeding.

TS

# Office Action Summary

Application No.

10/077,509

Applicant(s)

PAN ET AL.

Examiner

Steven Blount

Art Unit

2001

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969):

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of copending Application No. 09814346, and also claim 1 of copending application No. 10077527. Although the conflicting claims are not identical, they are not patentably distinct from each other because, with respect to 09814346, there is no difference between the elements in the body of the claims, and their preambles are virtually the same, a receiver (claim 19) being an obvious variant of a "time division duplex" (claim 1); and

Art Unit: 2661

with respect to 10077527, there is no difference between the elements in the body of the claims, and their preambles are virtually the same, a base station (claim 1 of 10077527) being an obvious type of user equipment (claim 1 of 1007509).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art (hereinafter AAPA) in view of IEEE publication “Joint Detection with Low Computational Complexity for Hybrid TD-CDMA Systems” to Benvenuto et al (document XP-000928922, 1999), and U.S. patent 5,719,899 to Thielecke et al.

With regard to claims 1 - 2, AAPA teaches that it is known in the art to combine time division duplex and code division multiple access in a multiple communications system with one or multiple codes and time slots associated with a communication sent over such a system, including one code in a time slot. See page 1 of the specification. AAPA also teaches that “A typical multiple chip rate is twice the chip rate” (page 6, line 12) in accord with the well known fact that oversampling to create greater accuracy is known in the art. AAPA does not, however, teach taking the combined, sampled signal

Art Unit: 2661

and estimating a channel response from which a channel response matrix is created and creating a spread data vector based on in part a FFT decomposition of a circulant version of the response matrix, and then despreading the spread vector; nor does AAPA teach the receiver to comprise an antenna, and a demodulator.

Benvenuto et al teaches estimating a channel response  $g$  and constructing a channel response matrix  $A$  based on an FFT of  $A$  in pages 619 – 620, especially page 619 (FFT taught on page 621, FT taught on page 620, column 2). Further, it is inherent that the spread signal is later despread, or else there would be no reason to send it through the communication “system” in the first place.

Regarding the antenna and demodulator, though these devices are very well known in the art, the examiner has cited Thielecke et al which teaches, in a very similar environment/device (including the use of an estimation device – see abstract), an antenna and a demodulator. See figures 1 and 5.

It would have been obvious, to one of ordinary skill in the art at the time of the invention, to have spread the combined signal of AAPA utilizing an FFT decomposition of a circulant version of the response matrix, in light of the teachings of Benvenuto et al, utilizing the system hardware taught in Thielecke et al, in order to reduce the complexity associated with multiuser detection in a TDD/CDMA system and thus allow for greater processing efficiency.

With regard to the following claims, hereinafter referred to as CI, note the following: CI 3: the only difference between claim 1 and claim 3 is that claim 1 has the word “for” in line 2 after the word “equipment”, which renders the claim essentially the

Art Unit: 2661

same as claim 1 for obviousness purposes; CI 4: see the rejection of claim 1 and note that it would be obvious to sample at a multiple of the chip rate before input into the channel estimation and data detector device; CI 5: see the rejection of claim 2 above; CI 6: Benvenuto teaches sampling the combined signal at a chip rate of the combined signal; CI 7: the permutation function is at least suggested by taking the inverse of the matrix 22; CI 8: each of the rows are defined and used in the matrix computations in Benvenuto et al; CI 9 – 11: the means corresponding means described in the specification of this application are obvious in view of AAPA/Benvenuto et al/Thielecke et al as described above; CI 12 – 16: each of these claim limitations is discussed in the rejections above.

6. Examiner Steven Blount may be reached at 703-305-0319 Monday through Friday between the hours of 9:00 and 5:30.



**KENNETH VANDERPUYE**  
**PRIMARY EXAMINER**

SB



11/27/03